

## PATENT SPECIFICATION



Application Date: Sept. 8, 1941. No. 11431/41.

549,840

Complete Specification Left: Aug. 12, 1942.

Complete Specification Accepted: Dec. 9, 1942.

Bibliothek  
Bur. Ind. Eigentum

PROVISIONAL SPECIFICATION

13 MRT. 1945

## Improvements in Conduits for Electric Cables

We, ARTHUR HARRY STEVENS, of 7, Barnard Road, Sutton Coldfield, in the County of Warwick, and GEORGE ARTHUR STEVENS, of 19, Knighton Close, Four Oaks, in the County of Warwick, both British subjects, do hereby declare the nature of this invention to be as follows:—

This invention relates to conduits for electric cables and refers more particularly to that kind of conduit which comprises a trunking of square, rectangular or other trough section having an open side adapted to be closed by a detachable cover, such trunking usually being made of sheet metal.

Trunking of the kind referred to is usually made in standard lengths or sections adapted to be connected together by connectors screwed to the ends of the trunking sections or the ends of fittings such as bends, T's or boxes which may be attached thereto.

In practice it is often necessary to cut short a length of trunking and its cover either at the end of a run or in order that a T or bend or box or other fitting may be introduced into the trunking at the correct position.

Hitherto, after cutting the trunking and cover in order to provide for the securing screws of the connectors it has been necessary to drill or punch accurately to position near the end of the shortened section of trunking and its cover holes for the reception of the securing screws.

The primary object of the present invention is to provide a means for securing together trunking sections or a trunking section and a fitting without the necessity for drilling or providing holes in either the trunking section or its cover or the fitting.

According to the present invention we provide a connector comprising a trough section body having a clamping plate adjustable by screw or other means towards or away from one side or the base of the body whereby the edge portion of the end of the trunking section or fitting can be gripped between the clamping plate and the body of the connector thus avoiding the necessity for making holes

in the trunking or fitting.

Further, according to the present invention the trunking may comprise a trough section body adapted to receive adjacent ends of trunking sections or a trunking section and a fitting, a clamping plate within the body and adjustable towards and away from its base so that the edge portions of the bases of the ends of the trunking sections or trunking section and fitting can be gripped thereby, inwardly directed lugs at the edges of the sides of the connector body, and a connector cover adapted to engage over the end portions of the covers of the trunking sections or trunking section and fitting, said connector cover being drawn by fastening means towards said lugs so as to grip the covers of the trunking sections or trunking section and fitting.

The lugs at the edges of the sides of the connector body may be formed by bending inwardly the ends of strips spot welded to the inner walls of the body sides. Alternatively, the said lugs may be formed by using a clamping plate of trough section arranged with its sides extending upwardly in spaced relationship to the sides of the body. In such an arrangement the ends of the sides of the clamping plate may be bent inwardly towards each other to form the lugs and the ends of the trunking or trunking and fitting may slide within the body in the space between the body and the clamping plate.

We may provide, within the connector and located on said lugs, a spacing bar adapted to engage by its ends the internal walls of the sides of the trunking section or fitting within the connector so that the said sides of the trunking section or fitting are forced into pressure contact with the sides of the connector body.

Instead of securing the connector cover by means of screws engaging in the lugs associated with the connector body or clamping plate the connector cover may be secured by a single screw or by more than one screw in the larger sizes passing downwardly through the top of the cover and engaging the spacer plate.

In one construction wherein the trunk-

[Price 1/-]

ing is of square or rectangular section the body of the connector is of right angled channel section adapted to fit around the exterior of the end of the trunking section or end of the fitting. The sides of the connector body are preferably of slightly less depth than the sides of the end portion of the trunking or fitting.

Secured to the internal wall of each side of the connector body by spot welding or other suitable means is a narrow strip of metal placed vertically. The edges of these strips form stops for the ends of the trunking sections or trunking section and fitting. The upper ends of these strips project somewhat above the upper edges of the connector body and at the top they are bent towards each other inwardly and drilled and tapped to receive screws.

Just above the base of the connector body is a clamping plate. This clamping plate may be rectangular in form and its end edges may engage the strips placed vertically against the sides of the body. This clamping plate can be adjusted towards or away from the base of the connector body by a single screw or bolt passing centrally through the clamping plate and either screwing into a tapped hole in the base of the body or passing through a clearance hole therein and provided with a nut at the back of the base.

The connector body complete with the strips referred to and the clamping plate receives adjacent ends of the trunking or of a trunking section and fitting, the base portion of each being slidden under the clamping plate of the connector and the screw thereof then being tightened to grip the trunking sections or trunking section and fitting.

In order to force the sides of the trunking sections or trunking section and fitting against the sides of the connector body a spacing bar may be provided and this spacing bar may be of rectangular form and of a width equal to the length of the connector body. The ends of the spacing bar are slotted so that the tapped screw holes in the lugs on the strips associated with the connector body are not covered thereby.

In one form the spacing bar is provided on its underside with a locating plate which may be spot welded in position and which may have a portion which is spaced away from the underside of the clamping bar and somewhat inclined thereto. With this construction the spacing bar can be pushed into position above the lugs associated with the body of the connector until the locating plate engages beneath the lugs and when in such position the spacing bar will force the end portions of the sides of

the trunking sections or trunking section and fitting against the sides of the connector body.

In another construction the spacing bar is formed as already described but the locating plate extends from end to end thereof under the slots which are provided to give access to the holes in the lugs. The ends of this locating plate are bent downwardly and then parallel with the surface of the spacing bar. Such a spacing bar can be placed in position with a lateral sliding motion and will be located by the locating plate on the lugs associated with the connector body.

In another construction the ends of the spacing bar may be bent downwardly to engage the sides of the trunking sections or trunking section and fitting and the ends of the spacing bar are slotted so that it will not cover the holes in the lugs.

The necessity for a spacing bar can be avoided if suitable projections are provided on the lugs forming parts of the strips attached to the sides of the connector body. These projections must be spaced away from the connector body by a distance equal to the thickness of the metal of the trunking or fitting, the arrangement being such that the ends of the trunking or fitting are slidden between the projections and the internal wall of the connector body.

When the spacing bar is in position the cover of the trunking section or fitting may be placed in position and when this has been done the cover of the connector is placed in position. The cover of the connector is of shallow channel section and it is secured by means of screws passing downwardly through holes in the cover of the connector and into the tapped holes in the lugs associated with the connector body. When these screws have been driven home the cover of the connector grips the end portions of the covers of the trunking sections or trunking section and fitting.

In an alternative construction instead of forming the lugs associated with the body on strips welded to the inner wall of the body the strips may be omitted and a clamping plate of trough section may be used and the ends of this plate may extend upwardly near the sides of the body and be bent inwardly to form the lugs on which the spacer plate slides.

In such an arrangement, after the clamping plate has been drawn down towards the body by the one or more screws at the base so as to grip the trunking sections or trunking section and fitting, one or more further screws may be passed through the sides of the body horizontally into tapped holes in the

vertical parts of the clamping plate. These screws will, of course, be disposed between the ends of the trunking.

10 Either in this arrangement or in the arrangement in which the lugs are formed on the strips welded to the body the connector cover may be secured to the spacing plate instead of to the lugs and the locating member of the spacing plate 5 may engage above the lugs instead of below them.

A connector body constructed in accordance with this invention may be spot welded or otherwise permanently 5 secured to one end of each trunking section and a connector cover may be permanently secured to one end of each trunking cover section.

It will be observed that the connector 5 body is located on the trunking sections or trunking section and fitting by tightening one or more screws and that the complete connection with the covers in position is effected by tightening two or 5 three screws or more to suit size of trunking.

Further, no drilling of the trough section or its cover is necessary or of the fitting.

10 Further, the connector fits externally over the ends of the trunking sections or trunking section and fitting so that the interior capacity is not seriously reduced by the connector and the ends of the 15 trunking sections or trunking section and fitting, any of which may have been cut off by unskilled labour and inaccurately, are entirely masked by the connector and its cover.

If required intermediate supports for 40 the covers of the trunking sections may be provided without drilling either the trunking section or its cover by U-shaped strips of metal embracing the trunking section on the exterior, these strips 45 having their ends bent apart, which end portions receive securing screws securing clamping bars extending across the cover.

In an alternative method of providing intermediate supports for the covers of the 50 trunking sections we may use spring clips for this purpose, these clips being adapted to embrace the trunking and its cover and having their ends between which there is a gap engaging the top of 55 the cover or engaging the underside of the trunking, it being possible to spring these ends apart to release the clips from the cover and trunking.

The cover and the trunking may be provided with indentations or longitudinal 60 grooves into which the end portions of such spring clips engage.

The connector body and clamping plate and spacer plate or any one of these mem- 65 bers may be made as castings or metal pressings.

The present invention may be used in conjunction with the inventions forming the subject of Patents Nos. 476,870 and 70 476,871.

Dated the 1st day of September, 1941.

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## COMPLETE SPECIFICATION

### Improvements in Conduits for Electric Cables

We, ARTHUR HARRY STEVENS, of 7, Barnard Road, Sutton Coldfield, in the County of Warwick, and GEORGEY 5 ARTHUR STEVENS, of 19, Knighton Close, Four Oaks, in the County of Warwick, both British subjects, do hereby declare the nature of this invention and in what manner the same is to be performed, to 10 be particularly described and ascertained in and by the following statement:—

This invention relates to conduits for electric cables and refers more particularly to that kind of conduit which com- 5 prises a trunking of square, rectangular or other trough section having an open side adapted to be closed by a detachable cover, such trunking usually being made of sheet metal.

10 Trunking of the kind referred to is usually made in standard lengths or

sections adapted to be connected together by connectors screwed to the ends of the trunking sections or the ends of fittings such as bends, T's or boxes which may be 95 attached thereto.

In practice it is often necessary to cut short a length of trunking and its cover either at the end of a run or in order that a T or bend or box or other fitting may be 100 introduced into the trunking at the correct position.

Hitherto, after cutting the trunking and cover, in order to provide for the securing screws of the connectors, it has 105 been necessary to drill or punch accurately to position near the end of the shortened section of trunking and its cover, holes for the reception of the securing screws. 110

The primary object of the present

invention is to provide a means for securing together trunking sections or a trunking section and a fitting without the necessity for drilling or providing holes in either the trunking section or its cover or the fitting.

According to the present invention, we provide a connector comprising a trough section body having a clamping plate adjustable by screw or other means towards or away from one side or the base of the body, whereby the edge portion of the end of the trunking section or fitting can be gripped between the clamping plate and the body of the connector, thus avoiding the necessity for making holes in the trunking or fitting.

Further, according to the present invention, the trunking may comprise a trough section connector body adapted to receive adjacent ends of trunking sections or a trunking section and a fitting, a clamping plate within the body and adjustable towards and away from its base so that the edge portions of the bases of the ends of the trunking sections or trunking section and fitting can be gripped thereby, inwardly directed lugs at the edges of the sides of the connector body, and a connector cover adapted to engage over the end portions of the covers of the trunking sections or trunking section and fitting, said connector cover being drawn by fastening means towards said lugs so as to grip the covers of the trunking sections or trunking section and fitting.

The lugs at the edges of the sides of the connector body may be formed by bending inwardly the ends of strips secured to the inner walls of the body sides. Alternatively, the said lugs may be formed by using a clamping plate of trough section arranged with its sides extending upwardly in spaced relationship to the sides of the body. In such an arrangement the ends of the sides of the clamping plate may be bent inwardly towards each other to form the lugs, and the ends of the trunking or trunking and fitting may slide within the body in the space between the body and the clamping plate.

We may provide, within the connector and located on said lugs, a spacing bar adapted to engage by its ends the internal walls of the sides of the trunking section or fitting within the connector, so that the said sides of the trunking section or fitting are forced into pressure contact with the sides of the connector body.

Instead of securing the connector cover by means of screws engaging in the lugs associated with the connector body or clamping plate, the connector cover may be secured by a single screw or by more

than one screw in the larger sizes passing downwardly through the top of the cover and engaging the spacing plate.

The nature of the invention is further described and ascertained with the aid of 70 the accompanying drawings which also show one manner in which the invention can be carried into practice. In these drawings—

Figure 1 is a perspective view showing 75 one application of the present invention.

Figure 2 is a perspective view showing the parts separated.

Figure 3 is a perspective view showing an alternative form of spacing plate. 80

Figure 4 is a perspective view showing another alternative form of spacing plate.

Figure 5 is a perspective view showing an alternative construction of connector body. 85

Figure 6 is a section on line 6—6 of Figure 1.

Figure 7 is a section on line 7—7 of Figure 6.

Figure 8 is a sectional view taken 90 through the connector body, showing a further modification.

Figure 9 is a sectional view on line 9—9 of Figure 8.

Figure 10 is a perspective view showing 95 one form of intermediate support for the cover.

Figure 11 is a sectional view showing another form of intermediate support for the cover. 100

Figure 12 is a sectional view showing a further form of intermediate support for the cover.

In the construction shown in Figures 1 and 2, the trunking 10 is of square or rectangular section and the body 11 of the connector is of right angled channel section adapted to fit around the exterior of the end of the trunking section or end of the fitting. The sides 12 of the connector body are preferably of slightly less depth than the sides 24 of the end portion of the trunking or fitting.

Secured to the internal surface of each side 12 of the connector body by spot 115 welding or other suitable means is a narrow strip 14 of metal placed vertically. The edges 15 of these strips form stops for the ends of the trunking sections or trunking section and fitting. The upper 120 ends 16 of these strips project somewhat above the upper edges 17 of the connector body, and at the top they are bent towards each other inwardly and drilled and tapped at 18 to receive screws. 125

Just above the base 19 of the connector body is a clamping plate 20. The end edges 21 of this plate engage the strips 14. This clamping plate can be adjusted towards or away from the base of the con- 130

connector body by a single screw 22 or bolt passing centrally through the clamping plate and either screwing into a tapped hole 23 in the base of the body or passing through a clearance hole therein and provided with a nut at the back of the base.

The connector body 11 complete with the strips 14 and the clamping plate 20 receives adjacent ends of the trunking or of a trunking section and fitting, the base portion of each being slidden under the clamping plate of the connector and the screw 22 (or bolt), then being tightened to grid the trunking sections or trunking section and fitting.

In order to force the sides 24 of the trunking sections or trunking section and fitting against the sides 12 of the connector body 11, a spacing bar 25 may be provided, and this spacing bar may be of rectangular form and of a width equal to the length of the connector body. The ends of the spacing bar are slotted at 26 so that the tapped screw holes 18 are not covered thereby.

In one form (see Figure 2), the spacing bar 25 is provided on its underside with a locating plate 27 which may be spot welded in position and which may have a portion 28 which is spaced away from the underside of the clamping bar and somewhat inclined thereto. With this construction the spacing bar can be pushed into position above the ends 16 of the strips 14 until the portion 28 of the locating plate engages beneath them, and when in such position the spacing bar will force the end portions of the sides 24 of the trunking sections or trunking section and fitting against the sides of the connector body.

In another construction (see Figure 3), the spacing bar 25 is formed as already described, but the locating plate 29 extends from end to end thereof under the slots which are provided to give access to the holes in the strips 14. The ends 30 of this locating plate are bent downwardly and then parallel with the surface of the spacing bar. Such a spacing bar can be placed in position with a lateral sliding motion and will be located by resting on top of the lugs 16 formed by the ends of the strips 14 associated with the connector body, with the ends 30 engaging beneath the lugs.

In another construction (see Figure 4), the ends 31 of the spacing bar may be bent downwardly to engage the sides of the trunking sections or trunking section and fitting, and the ends of the spacing bar are slotted as before so that it will not cover the holes in the lugs.

The necessity for a spacing bar can be avoided (see Figure 5) if suitable pro-

jections 32 are provided on the strips 14 attached to the sides of the connector body. These projections 32 are formed by small plates welded to the strips and spaced away from the connector body by a distance equal to the thickness of the metal of the trunking or fitting, the arrangement being such that the ends of the trunking or fitting are slidden between the projections 32 and the internal wall of the connector body.

When the spacing bar is in position, the cover 33 of the trunking section or fitting may be placed in position, and when this has been done, the cover 34 of the connector is placed in position. The cover of the connector is of shallow channel section and it is secured by means of screws 35 passing downwardly through holes in the cover of the connector and into the tapped holes in the lugs formed by the ends of the strips 14 associated with the connector body. When these screws have been driven home, the cover of the connector grips the end portions of the covers of the trunking sections or trunking section and fitting.

In an alternative construction (see Figures 8 and 9), instead of forming the lugs associated with the body on strips 14 welded to the inner wall of the body, the strips 14 may be omitted and a clamping plate 36 of trough section may be used, and the ends 37 of this plate may extend upwardly near the sides of the body and be bent inwardly to form the lugs on which the spacer plate slides.

In such an arrangement, after the clamping plate has been drawn down towards the body by the one or more screws 22 at the base so as to grip the trunking sections or trunking section and fitting, one or more further screws 38 may be passed through the sides of the body horizontally into tapped holes in the vertical parts 39 of the clamping plate. These screws will, of course, be disposed between the ends of the trunking or trunking and fitting.

Either in this arrangement or in the arrangement in which the lugs 16 are formed by the ends of the strips 14 welded to the body, the connector cover may be secured to the spacing bar 25 instead of to the lugs 16, and the locating member of the spacing bar may engage above the lugs instead of below them.

A connector body constructed in accordance with this invention may be spot welded or otherwise permanently secured to one end of each trunking section, and a connector cover may be permanently secured to one end of each trunking cover section.

It will be observed that the connector body is located on the trunking sections or trunking section and fitting by tightening one or more screws, and that the connecting plate connection with the covers in position is effected by tightening two or three screws or more to suit size of trunking.

Further, no drilling of the trough section or its cover is necessary or of the fitting.

Further, the connector fits externally over the ends of the trunking sections, or trunking section and fitting, so that the interior capacity is not seriously reduced by the connector and the ends of the trunking sections, or the trunking section and fitting, any of which may have been cut off by unskilled labour and inaccurately, are entirely masked by the connector and its cover.

If required, intermediate supports (see Figures 10 to 12) for the covers of the trunking sections may be provided without drilling either the trunking section or its cover, by providing U-shaped strips of metal embracing the trunking section on the exterior, these strips having their ends bent apart, which end portions receive securing screws securing clamping bars extending across the cover.

In an alternative method (Figure 11) of providing intermediate supports for the covers of the trunking sections, we may use spring clips for this purpose, these clips being adapted to embrace the trunking and its cover, and having their ends, between which there is a gap, engaging the top of the cover or engaging the underside of the trunking, it being possible to spring these ends apart to release the clips from the cover and trunking.

In the construction shown in Figure 12, a further alternative is shown, wherein two springs are used, one of which is shown at 45, the spring engaging under the bottom of the trunking and engaging the trunking cover near one edge.

The cover and the trunking may be provided with indentations or longitudinal grooves into which the end portions of such spring clips engage.

The connector body and clamping plate and spacing plate or any one of these members may be made as castings or metal pressings.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

1. A connector for electric cable conduits, comprising a trough section body

having a clamping plate adjustable by screw or other means towards or away from one side or the base of the body, whereby the edge portion of the end of the trunking section or fitting can be gripped between the clamping plate and the body of the connector, thus avoiding the necessity for making holes in the trunking or fitting.

2. A connector for electric cable conduits, comprising a trough section body adapted to receive adjacent ends of trunking sections or a trunking section and a fitting, a clamping plate within the body and adjustable towards and away from its base so that the edge portions of the bases of the ends of the trunking sections or trunking section and fitting can be gripped thereby, inwardly directed lugs at the edges of the sides of the connector body, and a connector cover adapted to engage over the end portions of the covers of the trunking sections or trunking section and fitting, said connector cover being drawn by fastening means towards said lugs so as to grip the covers of the trunking sections or trunking section and fitting.

3. A connector according to Claim 2, wherein the lugs at the edges of the sides of the connector body are formed by bending inwardly the ends of strips secured to the inner walls of the body sides.

4. A connector according to Claim 1 or 2, wherein the clamping plate is of trough section arranged with its sides extending upwardly in spaced relationship to the sides of the body, and having clamping members engaging the sides of the connector body and the sides of the clamping plate.

5. A connector according to Claim 4, wherein the ends of the clamping plate are bent towards each other to form lugs to which the cover of the connector can be attached.

6. A connector according to any of the preceding Claims, including a spacing bar on the connector adapted to engage by its ends the internal walls of the sides of the trunking section or fitting within the connector, so that the said sides are forced into pressure contact with the sides of the connector body.

7. A connector according to Claim 3, wherein the strips are provided with projections which are adapted to cause the ends of the trunking walls or fitting walls to engage the inner surfaces of the sides of the body.

8. A connector according to Claim 6 or 7, wherein the ends of the spacing bar are slotted to allow of access to tapped holes in the lugs by screws passing through the connector cover.

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9. A connector according to any of Claims 6 to 8, wherein the spacing bar is provided with a locating plate adapted to engage beneath the lugs.
- 5 10. A connector according to any of Claims 6 to 9, wherein the connector cover is secured to the spacing bar.
- 10 11. A connector according to any of the preceding Claims, including an external intermediate support for the cover of the trunking.

12. A connector for conduits, substantially as described and shown in any of the accompanying drawings.

Dated the 23rd day of April, 1942.

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75, New Street, Birmingham, 2, and

Jessel Chambers,

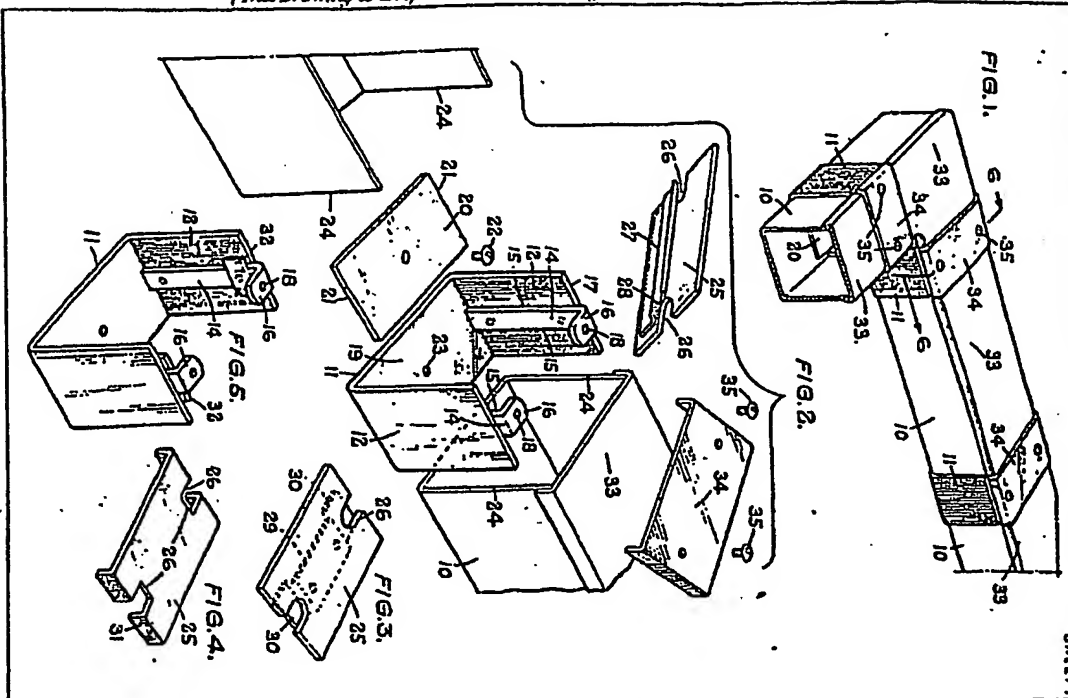
83/80, Chancery Lane, London, W.C.2.

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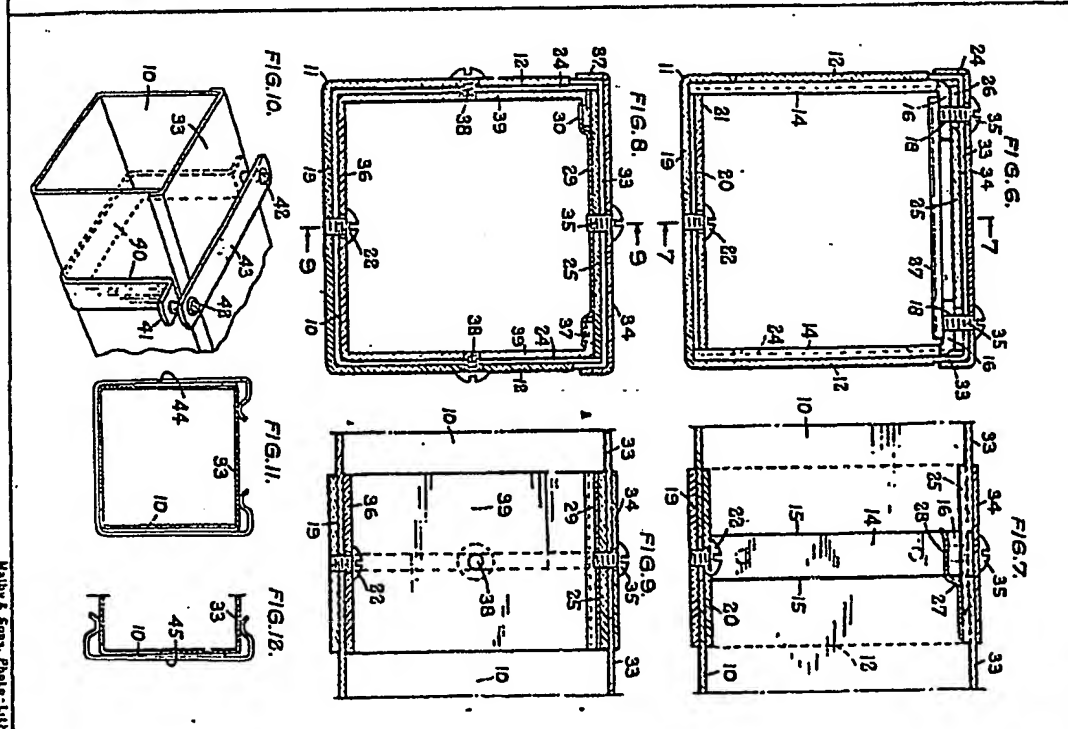
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549,840 COMPLETE SPECIFICATION

SHEET 1



2 SHEETS  
SHEET 2



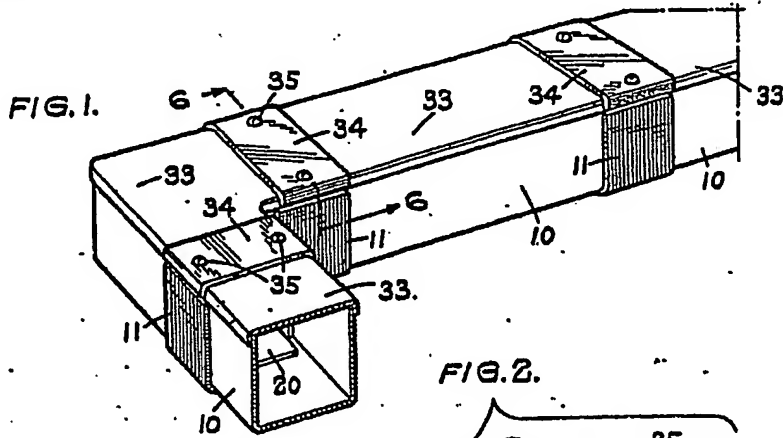


FIG. 2.

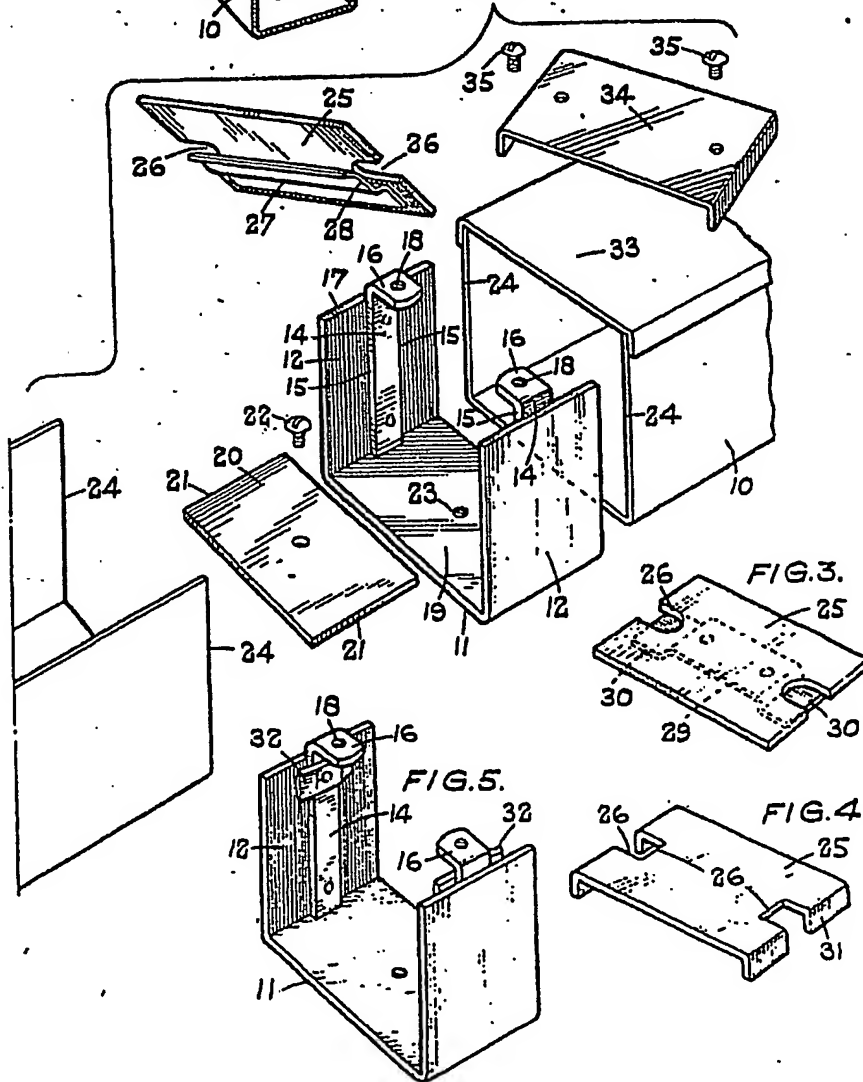


FIG. 5.

FIG. 3.

FIG. 4.

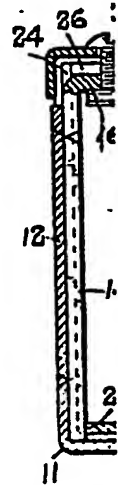


FIG. 10.



FIG. 11.

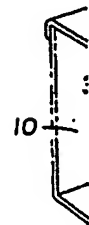
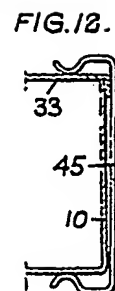
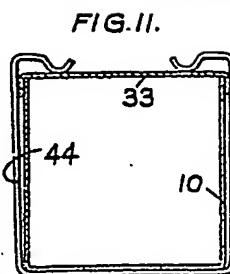
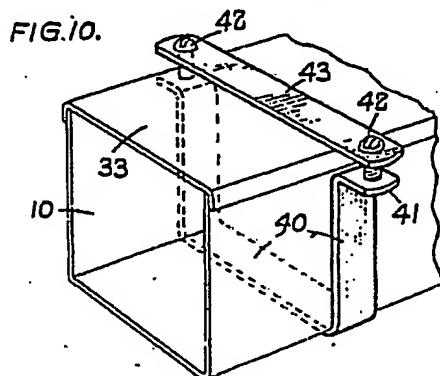
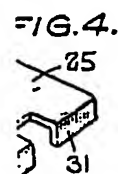
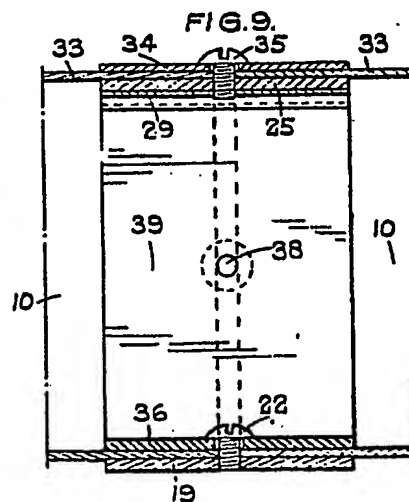
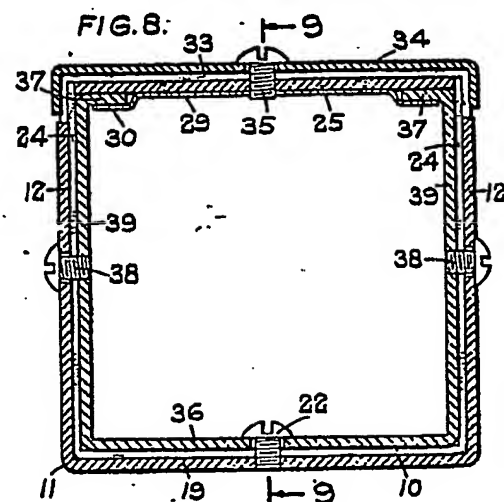
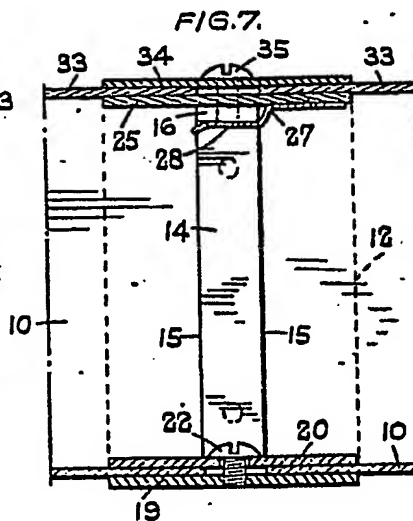
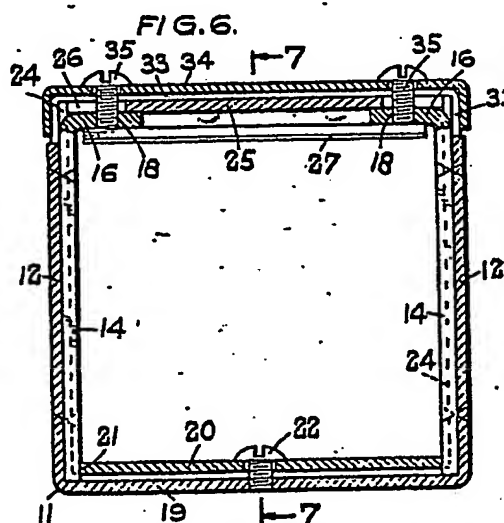


FIG. 12.

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